Farmland Values – Will the Boom Turn Bust?

Top Producer Seminar
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Agenda

• Is it a bubble?
• How much higher will they go? Are they too high already?
• What could change things?
• What are the concerns/risks?
Is it a Bubble?

• Economists – almost certainly not
• Is this reassuring?
  – Not very
  – We have a very difficult time identifying irrationality (disconnect from fundamentals) ex ante
• Are there troubling signs in the marketplace?
  – Yes a few
Putting it in Perspective

• Agriculture’s history includes periods of remarkable boom and bust

• Agriculture is capital intensive
  – Large increases in profitability make fixed assets priced in less profitable times look cheap
  – MAJOR capital restructuring underway

Key Questions:
  – Will these times last or will we retreat to previous levels?
  – Are farmland values in a speculative bubble or responding normally to economic conditions?
Types of Shocks which Alter Farming Profitability

- **Demand driven**: Expansion of demand which calls for more output at all price levels
  - For example, biofuels and income growth and food demand in emerging markets
  - Persistent demand growth can substantially increase land values and capital investment

- **Supply induced**: Supply contraction where less is available at all price levels
  - Short-term weather shocks do not typically impact fixed asset values
  - Inability of supply to keep up with normal demand expansion. If true could lead asset value increases

Current situation is complicated by interaction of both impacts **and** extremely low interest rates which make future income more valuable
So How Big are the Recent Increases in Farmland Values?
In Real Terms, Today’s Farmland Value Increases are on Par with those of the 70’s

<table>
<thead>
<tr>
<th>Region</th>
<th>Nominal Change</th>
<th>Annualized Growth Rate</th>
<th>Real Change and Annualized Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Percent</td>
<td></td>
</tr>
<tr>
<td>Iowa</td>
<td>1971-1981</td>
<td>399</td>
<td>122</td>
</tr>
<tr>
<td></td>
<td>17.4</td>
<td>8.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2001-2011</td>
<td>248</td>
<td>176</td>
</tr>
<tr>
<td></td>
<td>13.3</td>
<td>10.7</td>
<td></td>
</tr>
<tr>
<td>Illinois</td>
<td>1971-1981</td>
<td>343</td>
<td>97</td>
</tr>
<tr>
<td></td>
<td>16.1</td>
<td>7.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2001-2011</td>
<td>149</td>
<td>97</td>
</tr>
<tr>
<td></td>
<td>9.6</td>
<td>7.0</td>
<td></td>
</tr>
<tr>
<td>Indiana</td>
<td>1971-1981</td>
<td>381</td>
<td>114</td>
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<tr>
<td></td>
<td>17.0</td>
<td>7.9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2001-2011</td>
<td>104</td>
<td>62</td>
</tr>
<tr>
<td></td>
<td>7.4</td>
<td>4.9</td>
<td></td>
</tr>
</tbody>
</table>

a Iowa farmland values from the Iowa State Farmland Survey (Duffy). Indiana, Illinois, and U.S. Values from National Agricultural Statistics Service. Real values calculated using the CPI index.
Dramatic Price Increases Set Against Backdrop of:

• Numerous spectacular price increases and declines in the broader economy
  – Housing, tech stocks

• Will farmland follow suit?
Bubbles

.... you get a bubble when a very high percentage of the population buys into some originally sound premise.... that (the premise) becomes distorted as time passes and people forget the original sound premise and start focusing solely on the price action....

Excerpt from Warren Buffett’s interview with the Financial Crisis Inquiry Commission
How Does This Apply to the Farmland Situation?

• Fundamentals have undergone dramatic changes
  – Increased demand
  – Reduced interest rates
  – Supply shocks

Are market participants evaluating these factors when pricing farmland?
These multiples require either sustained income growth or continuing low interest rates (and likely both).
Will rates move up as slowly as they have moved down?
- Rate impact would likely felt on valuations today
- Cash flow impact will be secondary impact unlike 70’s
- Warning sign 1 – something changes to take us out of accommodation

Sources: Iowa and Illinois data were compiled from various Land Values and Cash Rent Summary reports published by the National Agricultural Statistics Service. The Indiana data are from the Purdue Annual Land Value Survey, June 2010.
Aside from the last two, recent years have been good but not spectacular.
Budgeted Profit/Loss and Cash Rent for High Quality Indiana Farmland, 1991-2013

- Combined profit and rent shot up in 2007
- Highly variable and < $500/acre
- How high will rents go?
- What is the risk with higher rents?

Source: Derived from Purdue Crop Budgets, ID-166, Corn-Soybean Rotation
Land Values Under Alternative Capitalization Rates (Multiples) and Income Levels

- 3% (33)
- 4% (25)
- 5% (20)
- 6% (17)
- 8% (13)

2012 Value HQ IN Farmland $7,704

Current Cash Rental Rate HQ IN Farmland, $265 per Acre
Cap Rate Risk

- Monetary policy change = cap rate ↑
- Economic recovery = cap rate ↑
- Inflation = cap rate ↑
- Increased volatility/risk = cap rate ↑
- Slowing income growth in ag = cap rate ↑
Relationship Between Real Interest Rate and Returns to Operators, 1962-2011

It is somewhat unlikely that incomes would rise with increasing real rates.
Exports Play a Key Role In Price Increases

Figure 6: World Harvested ACRES 13 Major Crops Total: (Millions)

Acreage response is underway!

1972/73 = 1,872
1981/82 = 2,115
1996/07 = 2,104
2002 = 2,033
2005/06 = 2,144
2012/13 = 2,267

123 Million acres added in 7 years

Where to with biofuels?

![Renewable Fuel Standard Chart](image-url)

<table>
<thead>
<tr>
<th>Year</th>
<th>Biomass-based Diesel</th>
<th>Non-celulosic Advanced</th>
<th>Celulosic Advanced</th>
<th>Conventional Biofuels</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>0.5</td>
<td>0.1</td>
<td>0.1</td>
<td>4</td>
</tr>
<tr>
<td>2007</td>
<td>0.65</td>
<td>0.2</td>
<td>0.25</td>
<td>4.7</td>
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<tr>
<td>2008</td>
<td>0.8</td>
<td>0.3</td>
<td>0.5</td>
<td>9</td>
</tr>
<tr>
<td>2009</td>
<td>1</td>
<td>0.5</td>
<td>1</td>
<td>10.5</td>
</tr>
<tr>
<td>2010</td>
<td>1</td>
<td>0.75</td>
<td>1.75</td>
<td>13.2</td>
</tr>
<tr>
<td>2011</td>
<td>1</td>
<td>1.5</td>
<td>3</td>
<td>13.8</td>
</tr>
<tr>
<td>2012</td>
<td>1</td>
<td>2</td>
<td>4.25</td>
<td>14.4</td>
</tr>
<tr>
<td>2013</td>
<td>1</td>
<td>2.5</td>
<td>5.5</td>
<td>15</td>
</tr>
<tr>
<td>2014</td>
<td>1</td>
<td>3</td>
<td>7</td>
<td>15</td>
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<tr>
<td>2015</td>
<td>1</td>
<td>3.5</td>
<td>8.5</td>
<td>15</td>
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<tr>
<td>2016</td>
<td>1</td>
<td>3.5</td>
<td>10.5</td>
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<td>2017</td>
<td>1</td>
<td>3.5</td>
<td>13.5</td>
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<tr>
<td>2018</td>
<td>1</td>
<td>4</td>
<td>16</td>
<td>15</td>
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<tr>
<td>2019</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2020</td>
<td>1</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>2021</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2022</td>
<td>1</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Land rent has averaged 35% of revenue over this period, high = 45%, low = 22%
Cash Rent per Bushel of Corn Yield, High Quality IN Farmland, 1976-2012
So What About Corn Prices?

- Darrel Good and Scott Irwin forecast the new plateau prices as follows:

<table>
<thead>
<tr>
<th></th>
<th>Corn</th>
<th>Soybeans</th>
<th>Wheat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post Dec 2006</td>
<td></td>
<td>----------</td>
<td>--------</td>
</tr>
<tr>
<td>Monthly Price</td>
<td></td>
<td>----------</td>
<td>--------</td>
</tr>
<tr>
<td>Average</td>
<td>4.60</td>
<td>11.50</td>
<td>5.80</td>
</tr>
<tr>
<td>High</td>
<td>6.70</td>
<td>19.10</td>
<td>10.15</td>
</tr>
<tr>
<td>Low</td>
<td>3.00</td>
<td>8.20</td>
<td>3.30</td>
</tr>
</tbody>
</table>

Box captures I&G’s price range if land receives 35% of gross revenue

Current yield = 192bpa, current rent = $265/acre
What Do Landowners Think?

• Current values are dependent upon continuation of low interest rates and high farm returns over variable costs

• Conducted and internet survey in Spring 2012
  – What do farmland investors think about future
    • Farmland prices
    • Cash rents
    • Crop prices
The Respondents

• Individuals in CCA database with interest in farmland and farming
• 246 complete responses (28%)
• 73% owned farmland
• 74% want to purchase more farmland in the next 5 years
• Median acres
  – owned = 500
  – rented from others = 1,200
  – rented to others = 240
### Percent that Believe Prices are in a Bubble

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>All respondents</td>
<td>52%</td>
</tr>
<tr>
<td>Actively operate a farm</td>
<td>54%</td>
</tr>
<tr>
<td>Primarily a landowner and rent to others</td>
<td>50%</td>
</tr>
<tr>
<td>Agricultural lenders, agribusiness, and others</td>
<td>56%</td>
</tr>
<tr>
<td>Own farmland</td>
<td>49%</td>
</tr>
<tr>
<td>Do not own farmland</td>
<td>72%</td>
</tr>
<tr>
<td>Purchased land in the last 5 years</td>
<td>51%</td>
</tr>
<tr>
<td>Interested in purchasing land in the next 5 years</td>
<td>46%</td>
</tr>
</tbody>
</table>
Respondents asked to consider:
80 Acres of Farmland with a production capability of 165 bushels of corn per acre under normal rain-fed conditions
Estimates of Farmland Value and Price at Auction, 196 Respondents, Spring 2012

Perception of the value for 80 with a production capability of 165 bushels of corn per acre under normal rain-fed conditions, $’s per acre

65% felt auction prices were higher than their perception of value
53% believe farmland prices are in a bubble
73% are interested in purchasing more farmland in the next 5 years
On average, respondents expect similar multiples in the future.
Distribution of Expected Average Cash Corn Prices Over the Next 5 Years, 189 Farmland Value Survey Respondents

Box captures I&G’s corn price range

There is a 1 in 10 chance the average corn price will be less than:
The average corn price will most likely be:
There is a 1 in 10 chance the average corn price will be greater than:
Almost no systematic relationship between perception of land value and expected corn prices
Most would use some debt to fund additional purchases.
Summary

• Price increases are on par with most dramatic seen in the last 50 years
• Prices clearly reflect view that returns over variable costs stay high and rates stay low
• It is unlikely that farmland fits the classic economic definition of a bubble, but this does not rule out the possibility that prices could fall substantially
• Negative demand shock would create significant pressure on land prices
Summary
Investors:
• Show cautious optimism about farmland investments
• Have some concern that market in a bubble
• Appear to be comfortable with multiples approaching 30 -- expect them to be maintained
• Expect corn prices to exceed $5.00/bu on average
• Despite some warning signs investors appear to be rationally evaluating fundamentals
• Those with very optimistic views may push prices higher but there is obvious concern on part of others
Final Thoughts

• The credit cycle will start to heat up – there will be significant pressure to finance rising land values
  – Many farmers have spectacular equity positions
  – Many new entrants and expansions will take place

• Land market should start to level off – if rates/fundamentals change watch the market closely
Final Thoughts

• Tremendous volatility in the ag marketplace
• For crop farmers it has been all favorable
  – How good are you at managing risk? (It has been easy so far)
  – How exposed are you to other’s risk management activities? Volatility creates winners and losers
  – How are you managing costs?
  – What about non-land capital investment?
  – When need for operating capital comes it will be substantial and much larger than before the boom
Final Thoughts

• Times in row-crop are very good
  – It is conceivable they could get better
  – It is also conceivable they could be worse
  – It is very difficult to predict what takes us out of this cycle, but credit can magnify the outcome either way

• How favorable is the current risk/return tradeoff for farmland?